

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 1. (Currently amended): In a single data communication channel, a multiple
2 access method comprising steps of:
3 (a) receiving a data sequence to be transmitted, the data sequence comprising
4 plural data symbols;
5 (b) producing a spread signal by modulating a first spreading code onto the data
6 sequence; and
7 (c) transmitting the spread signal to a base station,
8 wherein the first spreading code spans a period of time which exceeds the time
9 span of a data symbol,
10 wherein steps (a) - (c) are performed in each transmitter among a plurality of
11 transmitters, whereby the base station receives a transmitted spread signal from each of the
12 transmitters,
13 wherein step (c) is performed in each transmitter ~~absent any synchronization~~ with
14 the other transmitters. ASyn.

1 2. (Currently amended): The method of claim 1 further including performing
2 the steps (a) through (c) for a first plurality of the transmitters, ~~first transmissions~~ wherein for
3 each of the first ~~transmitter~~ transmissions, the step of transmitting includes providing a preamble
4 data sequence and modulating the preamble data sequence with a first preamble spreading code
5 to produce a spread preamble signal.

1 3. (Currently amended): The method of claim 2 further including performing
2 the steps (a) through (c) for a second plurality of the transmitters, ~~second transmissions~~ wherein
3 for each of the second ~~transmitter~~ transmissions, the step of transmitting includes providing a

- 4 second preamble data sequence and modulating the second preamble data sequence with a
5 second preamble spreading code to produce a second spread preamble signal.

1 4. (Currently amended): The method of claim 1 further including providing
2 a second spreading code ~~and performing the steps (a) through (c) for a plurality of transmissions,~~
3 wherein some of the transmitters ~~transmissions~~ use the first spreading code and others of the
4 ~~transmissions~~ transmitters use the second spreading code.

1 5. (Currently amended): The method of claim 1 ~~further including performing~~
2 ~~the steps (a) through (c) for a plurality of transmissions wherein for some of the transmissions~~
3 transmitters a first spreading gain is used and for others of the transmitters ~~transmissions~~ a
4 second spreading gain is used.

1 6. (Original): The method of claim 1 further including dividing the single
2 communication channel into plural sub-channels and performing steps (a) through (c) for each
3 sub-channel.

1 7. (Currently amended): The method of claim 1 ~~further including performing~~
2 ~~the steps (a) through (c) for a plurality of transmissions wherein for some of the transmissions~~
3 transmitters the data sequence is received at a first data rate and for others of the ~~transmissions~~
4 transmitters the data sequence is received at a second data rate.

1 8. (Currently amended): The method of claim 1 further including receiving
2 transmissions from a the base station ~~that uses~~ using paired carrier multiple access signaling.

1 9. (Currently amended): In a single communication channel, a multiple
2 access method comprising:
3 providing a first spreading code to each transmitter among a plurality of
4 transmitters;
5 in each transmitter, receiving plural a data sequences for transmission;

6 ~~for at least one of the data sequences in each transmitter,~~ generating a spread
7 signal by modulating the data sequence with the first spreading code and transmitting the spread
8 signal over the single communication channel to a base station,
9 wherein the first spreading code spans a period of time which exceeds the time
10 span of a data symbol,
11 wherein each transmitter transmits its spread signal to the base station
12 asynchronously with respect to the other transmitters.

1 10. (Original): The method of claim 9 wherein the data sequences originate
2 from different users.

1 11. (Currently amended): The method of claim 9 wherein the step of
2 transmitting includes providing ~~plural a~~ preamble data sequences and modulating ~~one or more of~~
3 the preamble data sequences with a first preamble spreading code to produce plural spread
4 preamble signals.

1 12. (Currently amended): The method of claim 11 ~~further including~~
2 ~~modulating one or more of the preamble data sequences with~~ wherein some of the transmitters
3 use the first preamble spreading code and others of the transmitters use a second preamble
4 spreading code.

1 13. (Original): The method of claim 12 wherein the step of modulating
2 includes repeating the first preamble spreading code one or more times.

1 14. (Currently amended): The method of claim 9 further including providing
2 a second spreading code and, for some of the transmitters ~~at least one of the data sequences,~~
3 generating a second spread signal by modulating the data sequence with the second spreading
4 code and transmitting the second spread signal.

1 15. (Original): The method of claim 14 wherein the first spreading code has a
2 first spreading gain and the second spreading code has a second spreading gain.

1 16. (Original): The method of claim 14 further including dividing the single
2 communication channel into at least first and second sub-channels and transmitting the first
3 spread signal over the first sub-channel and the second spread signal over the second sub-
4 channel.

1 17. (Currently amended): The method of claim 9 wherein ~~the step of~~
2 ~~receiving plural data sequences includes receiving~~ first transmitters receive first data sequences
3 ~~having a first data rate and receiving~~ second transmitters receive second data sequences having a
4 second data rate.

1 18. (Currently amended): The method of claim 9 further including receiving
2 transmissions from a the base station that ~~uses~~ using paired carrier multiple access signaling.

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1 19. (Currently amended): In a single data communication channel, a method
2 for providing multiple access to the channel comprising:

3 providing plural transmitters;
4 providing an identical first spreading code in each of the transmitters; and
5 in each transmitter: receiving a data sequence, spreading the data sequence using
6 the first spreading code to produce a spread signal, and transmitting the spread signal to a base
7 station,

8 wherein the first spreading code spans a period of time which exceeds the time
9 span of a data symbol,


10 wherein each transmitter transmits its spread signal to the base station
11 asynchronously with respect to other transmitters.

1 20. (Original): The method of claim 19 wherein the step of transmitting
2 includes: providing a preamble data sequence; modulating the preamble data sequence with a
3 first preamble spreading code in some of the transmitters to produce a spread preamble signal;
4 and transmitting the spread preamble signal.

1 21. (Original): The method of claim 20 wherein the step of modulating the
2 preamble data sequence in others of the transmitters uses a second preamble spreading code.

1 22. (Original): The method 19 further including:
2 providing plural additional transmitters;
3 providing an identical second spreading code in each of the additional
4 transmitters; and
5 in each of the additional transmitters: receiving a data sequence, spreading the
6 data sequence using the second spreading code to produce a spread signal, and transmitting the
7 spread signal.

1 23. (Original): The method of claim 22 wherein the first spreading code has a
2 first spreading gain and the second spreading code has a second spreading gain.

 1 24. (Original): The method of claim 19 wherein the step of receiving a data
2 sequence in one of the transmitters includes receiving the data sequence at a first data rate, and
3 the step of receiving a data sequence in another of the transmitters includes receiving the data
4 sequence at a second data rate.

1 25. (Original): The method 19 further including:
2 dividing the single communication channel into at least two sub-channels;
3 providing plural additional transmitters;
4 providing an identical second spreading code in each of the additional
5 transmitters; and
6 in each of the additional transmitters: receiving a data sequence, spreading the
7 data sequence using the second spreading code to produce a spread signal, and transmitting the
8 spread signal over one of the sub-channels.

1 26. (Currently amended): The method of claim 19 further including receiving
2 transmissions from a the base station ~~that uses~~ using paired carrier multiple access signaling.

1 27. (Currently amended): In a single data communication channel, a multiple
2 access method comprising steps of:

3 (a) receiving a data sequence to be transmitted, the data sequence comprising
4 plural data symbols;

5 (b) producing a spread signal by modulating a first spreading code onto the data
6 sequence; and

7 (c) transmitting the spread signal to a base station,
8 wherein the first spreading code does not repeat during the step of modulating the
9 data sequence,

10 wherein steps (a) - (c) are performed in each among a plurality of transmitters,
11 whereby the receiver receives a transmitted spread signal from each of the transmitters,

12 wherein the step of transmitting is performed in each transmitter absent any
13 synchronization with the other transmitters.

1 28. (Original): The method of claim 27 wherein the data sequence spans a
2 period of time that does not exceed a value T and the first spreading code spans a period of time
3 exceeding T.

1 29. (Currently amended): The method of claim 27 further including
2 performing the steps (a) through (c) for a first plurality of the transmitters ~~first transmissions~~
3 wherein for each of the first transmitters ~~transmissions~~, the step of transmitting includes
4 providing a preamble data sequence and modulating the preamble data sequence with a first
5 preamble spreading code to produce a spread preamble signal.

1 30. (Currently amended): The method of claim 29 further including
2 performing the steps (a) through (c) for a second plurality of the transmitters ~~second~~
3 ~~transmissions~~ wherein for each of the second transmitter ~~transmissions~~, the step of transmitting
4 includes providing a second preamble data sequence and modulating the second preamble data
5 sequence with a second preamble spreading code to produce a second spread preamble signal.

1 31. (Currently amended): The method of claim 27 further including providing
2 a second spreading code ~~and performing the steps (a) through (c) for a plurality of transmissions,~~
3 wherein some of the transmitters ~~transmissions~~ use the first spreading code and others of the
4 transmissions use the second spreading code.

1 32. (Currently amended): The method of claim 27 ~~further including~~
2 ~~performing the steps (a) through (c) for a plurality of transmissions wherein for some of the~~
3 transmitters ~~transmissions~~ a first spreading gain is used and for others of the transmitters
4 ~~transmissions~~ a second spreading gain is used.

1 33. (Original): The method of claim 27 further including dividing the single
2 communication channel into plural sub-channels and performing steps (a) through (c) for each
3 sub-channel.

1 34. (Currently amended): The method of claim 27 ~~further including~~
2 ~~performing the steps (a) through (c) for a plurality of transmissions wherein for some of the~~
3 transmitters ~~transmissions~~ the data sequence is received at a first data rate and for others of the
4 transmitters ~~transmissions~~ the data sequence is received at a second data rate.

1 35. (Currently amended): The method of claim 27 further including receiving
2 transmissions from a the base station ~~that uses~~ using paired carrier multiple access signaling.

1 36. (Currently amended): In a single communication channel, a multiple
2 access method comprising:
3 providing a first spreading code to each transmitter among a plurality of
4 transmitters;
5 in each transmitter, receiving plural data sequences for transmission;
6 in each transmitter, producing plural spread signals by modulating some of the
7 data sequences with the first spreading code, wherein the spreading code does not repeat during
8 the step of modulating; and

9 in each transmitter, transmitting the spread signals over the single communication
10 channel to a base station asynchronously with respect to the other transmitters.

1 37. (Original): The method of claim 36 wherein the data sequences originate
2 from different users.

1 38. (Original): The method of claim 36 wherein each data sequence
2 comprises at most N bits and wherein the first spreading code comprises at least $N \times g$ chips,
3 where g is process gain.

1 39. (Original): The method of claim 36 wherein the step of transmitting
2 includes providing plural preamble data sequences and modulating one or more of the preamble
3 data sequences with a first preamble spreading code to produce plural spread preamble signals.

1 40. (Original): The method of claim 39 further including modulating one or
2 more of the preamble data sequences with a second preamble spreading code.

1 41. (Original): The method of claim 40 wherein the step of modulating
2 includes repeating the first preamble spreading code one or more times.

1 42. (Currently amended): The method of claim 36 further including providing
2 a second spreading code, wherein ~~the step of producing plural spread signals includes~~
3 ~~modulating some of the data sequences~~ in some of the transmitters are modulated with the
4 second spreading code.

1 43. (Original): The method of claim 42 wherein the first spreading code has a
2 first spreading gain and the second spreading code has a second spreading gain.

1 44. (Original): The method of claim 42 further including dividing the single
2 communication channel into at least first and second sub-channels, and transmitting the first
3 spread signal over the first sub-channel and the second spread signal over the second sub-
4 channel.

1 45. (Original): The method of claim 36 wherein the step of receiving plural
2 data sequences includes receiving first data sequences having a first data rate and receiving
3 second data sequences having a second data rate.

1 46. (Currently amended): The method of claim 36 further including receiving
2 transmissions from a the base station ~~that uses~~using paired carrier multiple access signaling.

1 47. (Currently amended): In a single data communication channel, a method
2 for providing multiple access to the channel comprising:
3 providing plural transmitters;
4 providing an identical first spreading code in each of the transmitters; and
5 in each transmitter: receiving a data sequence, spreading the data sequence using
6 the first spreading code to produce a spread signal wherein the spreading sequence does not
7 repeat; ~~carriage return~~ and transmitting the spread signal to a base station, whereby the base station
8 receives a transmitted spread signal from each of the transmitters,
9 wherein each transmitter transmits its spread signal to the base station
10 asynchronously with respect to the other transmitters.

1 48. (Original): The method of claim 47 wherein the first spreading code spans
2 a period of time which exceeds the time span of the longest data sequence in any of the
3 transmitters.

1 49. (Original): The method of claim 47 wherein the step of transmitting
2 includes: providing a preamble data sequence; modulating the preamble data sequence with a
3 first preamble spreading code in at least some of the transmitters to produce a spread preamble
4 signal; and transmitting the spread preamble signal.

1 50. (Original): The method of claim 49 wherein the step of modulating the
2 preamble data sequence in some of the transmitters uses a second preamble spreading code.

1 51. (Currently amended): The method 47 further including:
2 providing plural additional transmitters;
3 providing an identical second spreading code in each of the additional
4 transmitters; and
5 in each of the additional transmitters: receiving a data sequence, spreading the
6 data sequence using the second spreading code to produce a spread signal, and transmitting the
7 spread signal to the base station.

1 52. (Original): The method of claim 51 wherein the first spreading code has a
2 first spreading gain and the second spreading code has a second spreading gain.

1 53. (Original): The method of claim 47 wherein the step of receiving a data
2 sequence in one of the transmitters includes receiving the data sequence at a first data rate, and
3 the step of receiving a data sequence in another of the transmitters includes receiving the data
4 sequence at a second data rate.

1 54. (Original): The method 47 further including:
2 dividing the single communication channel into at least two sub-channels;
3 providing plural additional transmitters;
4 providing an identical second spreading code in each of the additional
5 transmitters; and
6 in each of the additional transmitters: receiving a data sequence, spreading the
7 data sequence using the second spreading code to produce a spread signal, and transmitting the
8 spread signal over one of the sub-channels.

1 55. (Currently amended): The method of claim 47 further including receiving
2 transmissions from a the base station ~~that uses~~ using paired carrier multiple access signaling.

1 56. (Currently amended): ~~In a~~ A system for providing multiple access over a
2 single communication channel comprising a plurality of transmitters and a receiver to which
3 each transmitter transmits, a each transmitter comprising:
4 an input component configured to receive plural data sequences;
5 a memory store configured to contain a first spreading code, wherein the first
6 spreading code comprises more than g chips, where g is the processing gain;
7 a processing component in data communication with the memory store and
8 configured to modulate the data sequence with the first spreading code to produce a spread
9 signal; and
10 a transmission component configured to transmit the spread signal as a data burst,
11 wherein the spread signal is transmitted in asynchronous manner relative to the other
12/ transmitters.

1 57. (Original): The transmitter of claim 56 wherein the data sequences each
2 comprise at most N bits and the first spreading code comprises more than $N \times g$ chips.

1 58. (Original): The transmitter of claim 56 wherein the memory component is
2 further configured to contain a data preamble and a preamble spreading code and the processing
3 component is further configured to modulate the data preamble with the preamble spreading
4 code.

1 59. (Original): The transmitter of claim 58 wherein the processing component
2 is further configured to modulate the data preamble with the preamble spreading code by
3 repeating the preamble spreading code one or more times.

1 60. (Original): The transmitter of claim 56 wherein the memory store is
2 further configured to contain a second spreading code and the processing component is further
3 configured to modulate the data sequences with either the first or the second spreading code.

1 61. (Original): The transmitter of claim 60 wherein the first and second
2 spreading codes each spans a period of time greater than the time span of the longest data
3 sequence.

1 62. (Original): The transmitter of claim 60 wherein the first and second
2 spreading codes have different spreading gains.

1 63. (Original): The transmitter of claim 56 wherein some data sequences are
2 received at a first data rate and other data sequences are received at a second data rate.

1 64. (Original): The transmitter of claim 56 further including a receiver
2 component for receiving signals transmitted by paired carrier multiple access signaling.

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1 65. (Original): A system for providing multiple access over a single
2 communication channel, comprising:
3 a base station; and
4 plural transmitters, each configured to transmit data bursts to the base station in an
5 asynchronous manner,
6 each transmitter further configured to:
7 (i) receive a data sequence of at most N bits in length;
8 (ii) contain a spreading code, the spreading code comprising more than g
9 chips, where g is the processing gain;
10 (iii) modulate the data sequence with the spreading code to produce a
11 spread signal; and
12 (iv) transmit the spread signal as a data burst.

1 66. (Original): The system of claim 65 wherein the spreading code comprises
2 more than $N \times g$ chips.

1 67. (Original): The system of claim 65 wherein each transmitter is further
2 configured to contain a data preamble and a preamble spreading code and further configured to
3 modulate the data preamble with the preamble spreading code.

1 68. (Original): The system of claim 67 wherein each transmitter is further
2 configured to modulate the data preamble with the preamble spreading code by repeating the
3 preamble spreading code one or more times.

1 69. (Original): The system of claim 65 wherein each transmitter is further
2 configured to receive the data sequence at a first data rate, the system further including plural
3 additional transmitters, wherein each additional transmitter is configured to receive data
4 sequences at a second data rate different from the first data rate.

1 70. (Original): The system of claim 69 wherein the transmitters and the base
2 station are not configured to perform chip alignment or bit alignment.

1 71. (Original): The system of claim 65 wherein the base station is not
2 configured with a multi-user detection component.

1 72. (Original): The system of claim 65 wherein the base station transmits to
2 the transmitters using a paired carrier multiple access technique.

73 - 74. (Canceled)